AMENDMENTS TO THE SPECIFICATION:

At page 1, just after the title "COMPOSITE HOUGH TRANSFORM FOR MULTITARGET MULTISENSOR TRACKING", kindly enter the following heading and text:

CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation of prior application No. 09/477,811, filed January 5, 2000, now issued as U.S. Patent No. 6,724,916.

Kindly replace the paragraph that begins at page 5, line 18 with the following rewritten paragraph:

Figure 2 shows the mirror effect; two target tracks are shown. One is the reference track **19**; the other one is the mirror reflection **21** of the reference track **19**. Although the mirror track **21** is geometrically distinct from the reference track **19**, the linear array cannot differentiate between the two because the correlation trace generated by the mirror track **21** is exactly the same as that generated by the reference track **19**. It is useful to note that a track and its mirror track will have opposite signs (positive and negative) with respect to the right-turn rule for determining track direction, discussed above[[,]] .

Kindly replace the paragraph that begins at page 7, line 13 with the following rewritten paragraph:

Another object of the invention is to provide a device that ~~redcesa~~ reduces a large number of calculations to search over the full space.

Kindly replace the paragraph that begins at page 11, line 10 with the following rewritten paragraph:

Figure 17a shows the slice of RTCHS produced by the ACHT for a speed of 4.5 kts and D_1 of 1.0 nmi. ~~Figures 17c and 17d shows the slice of RTCHS and MTCHS for a speed of 9.0 kts and D_1 of 2.0 nmi.~~

Kindly replace the paragraph that begins at page 11, line 16 with the following rewritten paragraph:

Figure 18a shows the output Reference Track Composite Hough Space produced by the ACHT.

Kindly replace the paragraph that begins at page 11, line 18 with the following rewritten paragraph:

Figure 18b shows the output Mirror Track Composite Hough Space produced by the ACHT .

Kindly replace the paragraph that begins at page 11, line 20 with the following rewritten paragraph:

Figure 18c shows the output Reference Track Composite Hough Space produced by the MCHT .

Kindly replace the paragraph that begins at page 17, line 11 with the following rewritten paragraph:

The track direction θ is the angle between the target track and the baseline of the sensor system 52, measured counterclockwise, and defined by a right-turn rule. First, a CPA ray is drawn from the center of the two-sensor system ~~51~~ to ~~the~~ a CPA point ~~53~~. Second,

move along the CPA ray **55**, and make a right turn at the intersection of the CPA ray and the target track **48**. The track direction θ is positive if the target track 48 is headed in the direction of the right turn. Otherwise, the track direction θ is negative. Figures 6a through 6d ~~shows~~ show this convention. The two sensors **52** and ~~54~~ **56** are indicated by two small ellipses; the center of the sensor system **58** is the origin; the direction of the sensor system **62** is to the ~~eat~~ east and the baseline **64** of the sensor system is the horizontal line. Arrows that point from the origin to the target CPA indicate the CPA rays. ~~The two~~ Two target tracks ~~57~~ and ~~59are~~ are shown in each of the four quadrants [[,]] in Figures 6a through 6d: one with a positive ~~direction57~~ direction and one with a negative direction ~~59~~. The right-turn rule convention uniquely describes all possible target tracks.

Kindly replace the paragraph that begins at page 21, line 18 with the following rewritten paragraph:

The Hough Transformation is a form of the matched spatial filter. See, Sklansky ~~Slansky~~, ON HOUGH TECHNIQUE FOR CURVE DETECTION, IEEE. Trans. Computer, Vol 27, No. 10,pp. 923-926, 1978. In essence, the Hough Transform ~~hyposthesizes~~ hypothesizes a set of prototypes in the image, performs integration along the prototypes, and stores the normalized integration value in the Hough space. The DCHT hypothesizes a reference track relative to the primary array and derives the corresponding delay curve. Given a hypothesized track for the primary array and using the geometric constraints previously discussed, a corresponding delay curve can be derived for the secondary correlogram. An integration process is then performed along each of these delay curves; one

in the primary correlogram and one in the secondary correlogram. The integrated value from the primary correlogram is then combined with that from the secondary correlogram, ~~ans~~ and the result is stored in the Hough parameter space.

Kindly replace the paragraph that begins at page 31, line 12 with the following rewritten paragraph:

The peak statistic for the Composite Hough Spaces shown in **Figures ~~18~~ 18a** through **18d** are given in **Table 5**.

Kindly replace the paragraph that begins at page 32, line 19 with the following rewritten paragraph:

Figure 21a through ~~12f shows~~ 21f show the results of the ACHT while Figure 22a through 22f ~~shows~~ show the results of the MCTH. In each case, Figures 21a and 22a ~~shows~~ show the results of the first layer of onion-peeling and Figures 21b and 22b ~~shows~~ show the results of the second layer onion-peeling. Since the sum of the two correlation traces for target A 158 is 120 while that for the two target B 162 traces is 100, the ACHT first detects the target A 158, then target B 162. For the multiplicative Composition Hough Transform, the product of the two target A 158 traces is 2000 while the product of the two target B traces 162 is 2500. Thus, the MCTH will first detect the target B and then will detect the target A 158.

Kindly replace the paragraph that begins at page 33, line 8 with the following rewritten paragraph:

The real data used here is that shown in Figures 3a and 3b. These data were collected from a shallow-water environment with heavy surface ship traffic. The geometry of the two neighboring sensor arrays is listed in Table 1. The results of onion-peeling are shown in Figures 23a and 23b. The traces are as follows: first detected pair ~~164~~ 282, the second detected pair ~~166~~ 284, the third detected pair ~~166~~ 286, the fourth detected pair ~~168~~ 288, and the fifth detected pair ~~172~~ 290. The reconstructed delay curves closely match the real-data correlation traces, with the exception of the third target ~~166~~ 286 where the real-data correlation trace near the end of the observation period does not match the line depicting the third trace ~~166~~ 286. This mismatch is not expected; the CHT assumes that the targets maintain a constant course and the third target ~~166~~ had a course change near the end of the observation period.